

Northeast Area News

MLRA Soil Survey Region 12

Spring 2004

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Northeast Area News is published quarterly by the Major Land Resource Area 12 office (MO-12) in Amherst, MA.

Ideas, suggestions, and comments are welcome.

Please send items to:
Kristina.wiley@ma.usda.gov.

Subaqueous Soil/Sediment User Conference

By Jim Turenne, Assistant State Soil Scientist, Rhode Island

Approximately 75 people attended the MapCoast Partnership for Coastal Soils and Sediment User Conference held on April 30th at the University of Rhode Island's (URI) Bay Campus overlooking Narragansett Bay. The purpose of the conference was to provide individuals working in the coastal community background information about coastal and subaqueous soils and sediment, inform the group about NRCS's plan to map the subaqueous soils in the Northeast, and obtain feedback from the individuals as to their interests and types of data they would like to be included in the survey.

The MapCoast partnership was set up to bring together groups with common interests in mapping and inventorying the coastal and subaqueous soil and sediment resources in Rhode Island (more information about MapCoast can be found at: <http://www.mapcoast.org>).

The user conference featured morning lectures which included an introduction to subaqueous soils (Mark Stolt, Professor of Pedology, URI), coastal geologic processes (Jon Boothroyd, State Geologist/Professor of Geology, URI), the BayMap project and remote sensing equipment (John King, Professor of Oceanography), and information about NRCS's plan for a subaqueous soil survey for the Northeast (Judith Doerner, State Conservationist for RI.). The meeting was kicked off with an excellent talk from Peter August, Director of the Coastal Institute and Professor of Landscape Ecology at URI. Peter talked about the many uses of soil survey data and why the information is needed for the coastal community. The afternoon session split the audience up into break-out groups to provide information about the type of data they use and what they would like to be included in a subaqueous soil survey. The group was extremely interested in the soil mapping and provided excellent feedback. Participants represented a wide array of disciplines which included federal, state, and town agencies, university people, the public non profit groups, political people, and the private sector.

A summary of the meeting will be posted on the MapCoast website shortly. If people would like to be added to a listserv which will notify participants about subaqueous soils, send an email to: jim.turenne@ri.usda.gov. ■

New URL for MO Webpage

By Shawn Finn, MO-12 Soil Data Quality Specialist

The MLRA Office has changed the location of its webpage and now has a new URL. The MO can also be found using the tab, "NEA Soils" (the MO is known in some circles as Northeast Area Soils), located on the main Massachusetts home page. Please update your bookmarks to:

<http://www.ma.nrcs.usda.gov/neasoils/index.html>. ■

Web Links

The Society of Soil Scientists of Southern New England's Spade and Auger
<http://nesoil.com/sss/sne/winter04a.pdf>

Northeast Area Soils
<http://www.ma.nrcs.usda.gov/neasoils/index.html>

National Soil Interpretations Advisory Group (NSIAG)
<http://soils.usda.gov/use>

MapCoast Partnership for Coastal Soils and Sediment
<http://www.mapcoast.org>

National Soil Survey Center Tests XRF Meter
<http://www.nrcs.usda.gov/news/thisweek/2004/040414/soilradarelementanalysis.html>

Southern Penobscot County Water Table Study

By David Turcotte, Soil Survey Project Leader, Dover-Foxcroft, Maine

In April, 2002, a water table study was initiated at six sites in the towns of Corinth and Exeter, Maine. These sites are within the Southern Penobscot County Soil Survey Area, which is an update survey of the southern third of the county. A new catena of *Eutrudepts* is being set up in this geomorphic area (extending into adjacent towns of Corinna, Garland, Newport, and Stetson). This geomorphic area may extend down into Southern Somerset and Kennebec Counties, and as such when these surveys are updated this new catena of soils may be incorporated. These sites are in the heart of "the other" potato country in Maine. The potato country is in spacious Aroostook County (or "The County") on Caribou catena soils of Northeastern Maine.

The initial purpose of this study was to monitor the hydrology of deep soils on "A" slopes in the potato fields (believed to be dominantly moderately well drained), and to test for perched vs. apparent water tables in somewhat poorly drained forested pedons. The deep, better drained (*moderately well drained to well drained*) soils in this catena do not have densic materials, even though they occupy what a pedologist or geomorphologist would normally construe as a lodgment till setting. The reasoning for this appears to be the influence of calcium and magnesium carbonates on soil flocculation, and how pelitic limestone and calcareous metasiltstone are susceptible to acid solution weathering. Saprolite and pH's in the neutral range may preclude the use of redoximorphic features as indicators of seasonal saturation and aquic conditions in these soils. Outside of the absence of densic materials, morphological indicators of these soils are limestone "ghosts" (*a historical and geological term used in the original Penobscot County Survey and in the published Aroostook County Surveys*), parachanners, strong subangular blocky structure in the substratum, paralithic materials, and/or saprolite. These "ghosts" are now described as highly weathered, very friable rock fragments (*that slake in water and hence are non-cemented*).

With respect to the monitoring of water tables, at each site both a monitoring well and piezometer were installed to 100 centimeters to answer the question as to whether water tables are apparent or perched. Initial water table and soil morphological observations suggest that the somewhat poorly drained member of this catena also does not have densic materials, though further investigations and descriptions are needed to answer this question conclusively. The Monarda and Burnham Series — inceptisols with comparable particle-size distributions — will be used as the poorly drained and very poorly drained members of this catena. These soils are already members of the Chesuncook catena, silt loam soils with 10-18 percent clay formed in lodgment till. The Chesuncook series is the official state soil of Maine.

Beyond water tables (*whenever present*) being monitored in the wells and piezometers, at each site rain gauges have been installed to monitor precipitation. Using a thermocouple, soil temperature at 50 cm, water (*whenever present*) temperature in the well, soil temperature at 10 cm, and air temperature are being monitored on a weekly basis from spring to early summer, and in autumn. Weekly monitoring will occur during spring to early summer and in autumn when soil (*at 50 cm*) and water (*whenever present in the well*) temperatures are both above 5° C (commonly referred to as biological zero), and when there is water in the pipes.

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Seasonal Water Table and Temperature Relationships In Glaciomarine Soils of Eastern Maine

David E. Turcotte
and David E.
Wilkinson, USDA-
Natural Resources
Conservation
Service, Dover-
Foxcroft and
Lewiston, Maine

Abstract

Water table depths, soil temperature, and dissolved O₂ content (DOC) in "free water" were monitored for three to seven growing seasons in four frigid, fine, very deep, glaciomarine pedons in Machias, Maine. Three of the pedons are somewhat poorly drained Aquepts, while the other is an eroded, moderately well drained Udepts. Hydrologic data from each pedon during the growing season supported the aquic moisture regime and somewhat poor drainage class, even in the eroded Udepts. Very brief durations of saturation were observed at the depth to redoximorphic features in each pedon, features attributed to the capillary fringe in

Water table study continued from page 2

Hobos at depths of 38 and 50 cm are being introduced this year to collect automated, more continuous soil temperature data at each site. Finally, this year we have begun to measure dissolved oxygen content (*in mg/l*) near the surface of the water in the wells.

Full pedon descriptions (*with supporting particle-size, 15 bar water, base saturation, CEC and pH analyses*) have been made at each site to compare soil morphology to durations of saturated soil during the growing season. Since soil morphology at the somewhat poorly drained sites does not support an aquic moisture regime (*i.e. aquepts rather than udepts*), saturated soil within 50 cm of the mineral soil surface has been tested to see if enough ferrous iron is present to give a positive reaction to *alpha*, *alpha*-dipyridyl. With 5-7 weeks of saturation above 50 cm (both in the spring and in the fall of 2003) and proper context and only one positive reaction across three sites, I have concluded that the somewhat poorly drained soils will be udepts. The coarse-loamy nature of these soils, "B" slopes, and maybe less acidic conditions (compared to Dystrudepts or Orthods in the survey area) should account for the propensity of negative reactions to *alpha*, *alpha*-dipyridyl.

A daily NOAA climatic station with long term records in neighboring Corinna will be used to see if precipitation for a given year (based on December-November time frames) is construed to be "normal", and hence to keep results in their proper context. The climatic data will also be referred to for analyzing relationships between air and soil temperature, growing season concepts based on air temperature vs. soil or "free" water temperature, and precipitation vs. soil hydrology. This station is invaluable to the study, if for no other reason than to keep soil hydrology and soil temperature results in their proper context.

The study is planned for 8 growing seasons — or the planned duration of the Southern Penobscot County Soil Survey through 2009. The experimental design and statistical analyses will be comparable to the 1989 – 1995 Washington County water table study, which was published in this spring's issue of *Soil Survey Horizons* by David Turcotte, Soil Survey Project Leader, Dover-Foxcroft, ME; and David Wilkinson, Soil Resource Specialist, Lewiston, Maine. Beyond that study's design and analyses though, this study offers two more study sites, will address wetlands hydrology (per 1987 Army Corps of Engineers wetlands delineation manual) at the somewhat poorly drained sites, and will address soil temperature growing season comparisons to frost-free season based on 28°F and 32°F thresholds. ■

Hispanic Heritage Month

Hispanic Heritage Month is celebrated in September. The theme for this year's celebration is "**Hispanic Americans: Making a Difference in Our Communities and Our Nation**". The Civil Rights Division is holding a poster contest for Hispanic Heritage Month. The poster must: 1) contain the theme, 2) be in electronic format, and 3) show diversity. Inquires may be directed to Gilbert Guerrero, acting National Hispanic Emphasis Program Manager, at (301)504-2336 or email at gilbert.guerrero@va.usda.gov. ■

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Abstract continued

these fine-textured soils. A reasonable correlation ($R^2=0.59$) was observed between length of frost-free season and soil temperatures above biological zero, while annual and seasonal precipitation did not correspond well with water table depths. Frost-free season was considerably shorter, and ended 5-6 weeks sooner in autumn relative to soil temperature. Autumn water table depths were shallower than spring, but aquic conditions prevailed in the spring due to warmer soil temperatures and much lower DOC. Soil temperature at 20 inches was similar between sites, and could be predicted by calendar date with a relatively high degree of confidence ($R^2 = 0.885$). Soil temperature at 6 inches was more variable relative to the 20-inch depth and was higher in spring, lower in fall, and approximately equal in mid- to late-September. Dissolved O_2 content was much lower for water tables in the silty clay substratums, rather than the silty clay loam or silt loam sola. ■

National Soil Interpretations Advisory Group (NSIAG) Website

By Karl W. Hipple, PhD CPSSc, National Leader-Soil Survey Interpretations

The NSIAG website has been redesigned and is now available at <http://soils.usda.gov/use> (click on National Soil Interpretations Advisory Group). The renovated site now contains, among other information, a list of issues that have been submitted for NSIAG consideration. The issues are separated into 3 groups: 1) proposed, 2) active, and 3) completed. We are seeking your input, particularly on the active issues.

Each active issue is formatted to contain an executive summary, background, current status, and proposed recommendation(s). We are soliciting input from all users regarding additional concerns for each issue, other information/suggestions, other proposed solutions, and/or specifically comments regarding the proposed recommendations. Each issue has a contact person (with hyperlink) and an end date for comments.

NSIAG will use the additional input to finalize recommendations for each issue and then prepare final recommendations to present to NCSS leadership. Upon a final decision, the decision with its supporting information will be posted to the web under the completed issue category for your information.

NSIAG is very interested in obtaining additional feedback and information from those who will be impacted by these proposed changes/decisions. NSIAG will consider all comments and information generated by soil scientists and other users in preparing final recommendations for NCSS leadership.

The NSIAG website will be updated three times each year (after each NSIAG meeting or teleconference). New and updated issues, issue priorities, updated NSIAG membership information, and draft minutes of each meeting will be posted at that time. ■

Massachusetts Welcomes Two New Soil Scientists

Steve Scaturro has been hired as a soil scientist for the Franklin County Soil Survey update. Steve comes to Massachusetts after working the past three years as a soil mapper for NRCS in Dover-Foxcroft, ME. Steve is a graduate of the University of Maine (BS Natural Resources, with concentration in soil and water conservation).

Melissa Hayden has been hired as a soil scientist for the Plymouth County Soil Survey update. Melissa will assist with completing soil mapping as well as help prepare and document the survey for publication.

Melissa is a former student from both the University of Rhode Island (BS Environmental Science and Management) and the University of Vermont (MS Soil Science). Until recently, Melissa was a Wildlife Habitat Restoration Intern with NRCS in Rhode Island.

We welcome Steve and Melissa to the Massachusetts soils staff. ■

Mark Your Calendars

The 2004 Northeast National Cooperative Soil Survey Conference will be held June 21 – 24, at Canaan Valley, West Virginia.

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MO Message

By Bruce Thompson, MO-12 Team Leader

The cool, wet spring is occurring as a normal New England weather pattern, but after a cold winter, it does allow us to get back to the field and do what we really enjoy. The MLRA staff is looking forward to making our field review visits.

A month ago I sent a request to the state offices to verify some classifications of soils used when the STATSGO data was originally published. At that time we used SSSD as our database. Since it was decided that the database needed to be converted to NASIS, personnel at the NSSC have worked through a multi-step process to convert the data. The end result is that MO-12 had approximately 50 series that had missing CEC activity classes, or soils classified as shallow that needed to have their textural classifications changed to loamy from coarse-loamy or fine-loamy. I appreciate the state staffs for reviewing the proposals and returning their recommendations back to the MO. There are several soils that are still classified as Fragi that have dense till in the substratum that needs to be field checked for accuracy. Those series still with the Fragi in their classification, that are missed classified, were used 25 to 30 years ago and have not been correlated since then. When we finally institute the MLRA concept and start maintenance mapping, I am sure we will be able to clean up some of these problems. The Millis series which was mapped in southern Massachusetts 30 years ago, *yes I did map this series*, was correlated in New Hampshire in Carroll, County. It is listed in the OSD as being Frigid and classified as a Fragiorthod. The OSD still lists the series as being in the town of Dover, Norfolk County, Massachusetts. When this series was transferred to New Hampshire, the correlation process was not fully completed. This is an example of some of the situations that develop when we make concept changes in taxonomy.

Earlier this year, the MO-12 Board of Directors discussed a proposal that had been drafted by personnel in Rhode Island to form a MLRA office for the purpose of conducting subaqueous mapping as part of MO-12 activities. After several discussions, a proposal was finalized and sent to Mike Golden, Director, Soil Survey Division, for consideration. The concept would provide mapping of the terrestrial area usually associated with sand dunes and the beach area and water to a depth of about 2.5 meters. This would expand on some of the work done in Maryland. Dr. Stolt of the University of Rhode Island will be conducting studies this summer in order to expand the techniques and knowledge base needed to initiate the concept in southern New England waters. MO-12 will be providing technical support for this study.

Although Ken Lubich is now the new program manager for the Soil Survey Division, he still is pushing us to complete our assigned responsibilities that are part of the SSURGO initiative. Darlene has been receiving several compilation and digitizing requests for quality assurance and there is a small backlog. If projects have been completed during the winter, please finalize them and forward them to the MO-12 office. I am sure the requests will start to slow down with the staffs returning to the field to do mapping. ■